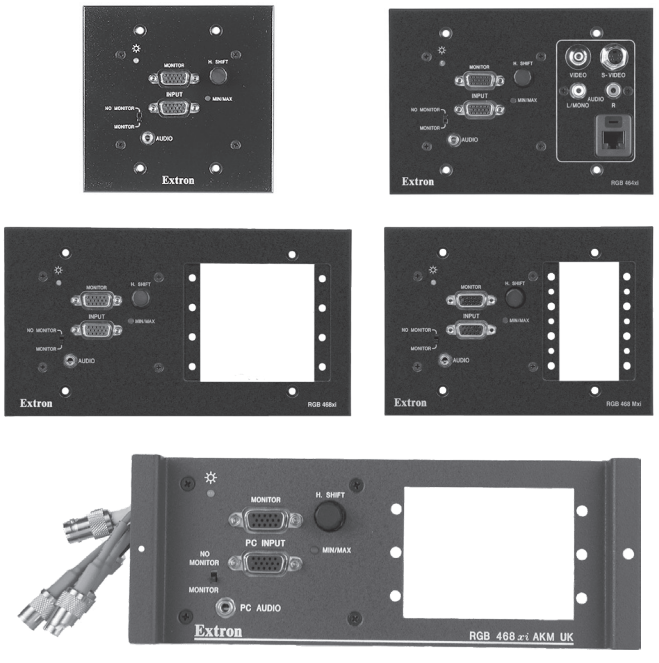
User Guide

Interfaces

RGB 460xi Series

Architectural Series Interfaces



68-542-01 Rev. G
07 11

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer instructions.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Avertissement

Alimentations • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

安全须知 • 中文

这个符号提示用户该设备用户手册中有重要的操作和维护说明。

这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用 户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过 。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

NOTE: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.

For more information on safety guidelines, regulatory compliances, EMI/EMF compliance, accessibility, and related topics, **click here**.

Conventions Used in this Guide

In this user guide, the following are used:

NOTE: A note draws attention to important information.

TIP: A tip provides a suggestion to make working with the application easier.

CAUTION: A caution indicates a potential hazard to equipment or data.

WARNING: A warning warns of things or actions that might cause injury, death, or other severe consequences.

Commands are written in the fonts shown here:

```
^AR Merge Scene,,Op1 scene 1,1 ^B 51 ^W^C
```

```
[Ø1] R ØØØ4 ØØ3ØØ ØØ4ØØ ØØ8ØØ ØØ6ØØ [Ø2] 35 [17] [Ø3]
```

Esc X1 * X17 * X20 * X23 * X21 CE ←

NOTE: For commands and examples of computer or device responses mentioned in this guide, the character "Ø" is used for the number zero and "O" represents the capital letter "o."

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 2Ø8.132.18Ø.48: bytes=32 times=2ms TTL=32
```

```
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx –t
```

```
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.

Click the **OK** button.

Copyright
© 2011 Extron Electronics. All rights reserved.

Trademarks
All trademarks mentioned in this guide are the properties of their respective owners.

Contents

Introduction 1

About this Manual 1
About the RGB 460xi Series 1
Features 2
Application Examples 2

Installation and Operation 3

Installation Overview 3
Installation Checklist: 3
UL Guidelines 4
Front Panel Features and Cabling 4
Rear Panel Features and Cabling 7
Euro Channel and Floor Box Versions 10
Mounting Adapter Plates (AAPs or MAAPs) 11
Pre-installation Testing 12
Troubleshooting 12
Interface Mounting 12

Reference Information 13

Specifications 13
Ordering Information 16
Accessories 17
Cables 17
AAP and MAAP Modules 18

Introduction

This section provides an overview of this guide and describes the RGB 460xi architectural interface series and its features.

Topics that are covered include:

- **About this Manual**
- **About the RGB 460xi Series**
- **Features**
- **Application Examples**

About this Manual

This manual describes the Extron RGB 460xi Series of universal wall, furniture, and floor box mountable interfaces and explains how to configure and operate them. Unless otherwise noted, the term "RGB 460xi" or "interface" is used throughout this manual to refer collectively to the RGB 460xi, RGB 464xi, and RGB 468xi and their variations. Where there are differences, they are pointed out.

Detailed mounting instructions are available in other Extron publications which are available on the Extron Website:

- For wall box installations, refer to one of the available wall box installation guides.
- For MK box installations, refer to part number **68-636-02**.
- For wall or furniture mount installations with Euro Channel versions, refer to part number **68-636-03**.
- For Steel City® floor box installations, refer to part number **68-636-04**.
- For FSR floor box installations, refer to part number **68-636-05**.
- For AKM UK floor box installations, refer to part number **68-904-01**.

About the RGB 460xi Series

The Extron RGB 460xi, RGB 464xi and RGB 468xi are compact computer video interfaces. Each interface comes in either a two-gang (RGB 460xi), three-gang (RGB 464xi and RGB 468 Mxi), or four-gang (RGB 460xi MK and RGB 468xi) wall box size, except Steel City, MK, FSR, and AKM UK floor box models. Optionally, the 460xi and 468xi come in an EC version which mounts in a Euro Channel. The interfaces (except for the RGB 460xi MK, FSR, and AKM UK models) are also wall or furniture mountable and come with a matching mud ring kit (part number **70-519-xx**). The interfaces have a 300 MHz (–3 dB) video bandwidth.

Each interface accepts one VGA-UXGA compatible computer video input (15-pin HD) and one stereo audio input. All models include a 15-pin HD buffered local monitor output.

Features

- **Horizontal shifting control** — The displayed image may be shifted to the left or right by turning a front panel knob.
- **Advanced Digital Sync Processing (ADSP™)** — ADSP allows sync processing operations, such as horizontal centering, to occur without affecting the sync timing of the signal. This allows horizontal centering to be applied to signals that are output to digital display devices such as LCD projectors, DLP projectors and plasma displays. An internal DIP switch provides another option, Digital Display Sync Processing, (DDSP™), to ensure proper displays without altering sync pulse timing or width.
- **Stereo audio** — Unbalanced stereo audio inputs can be output as balanced or unbalanced unamplified stereo audio.

Application Examples

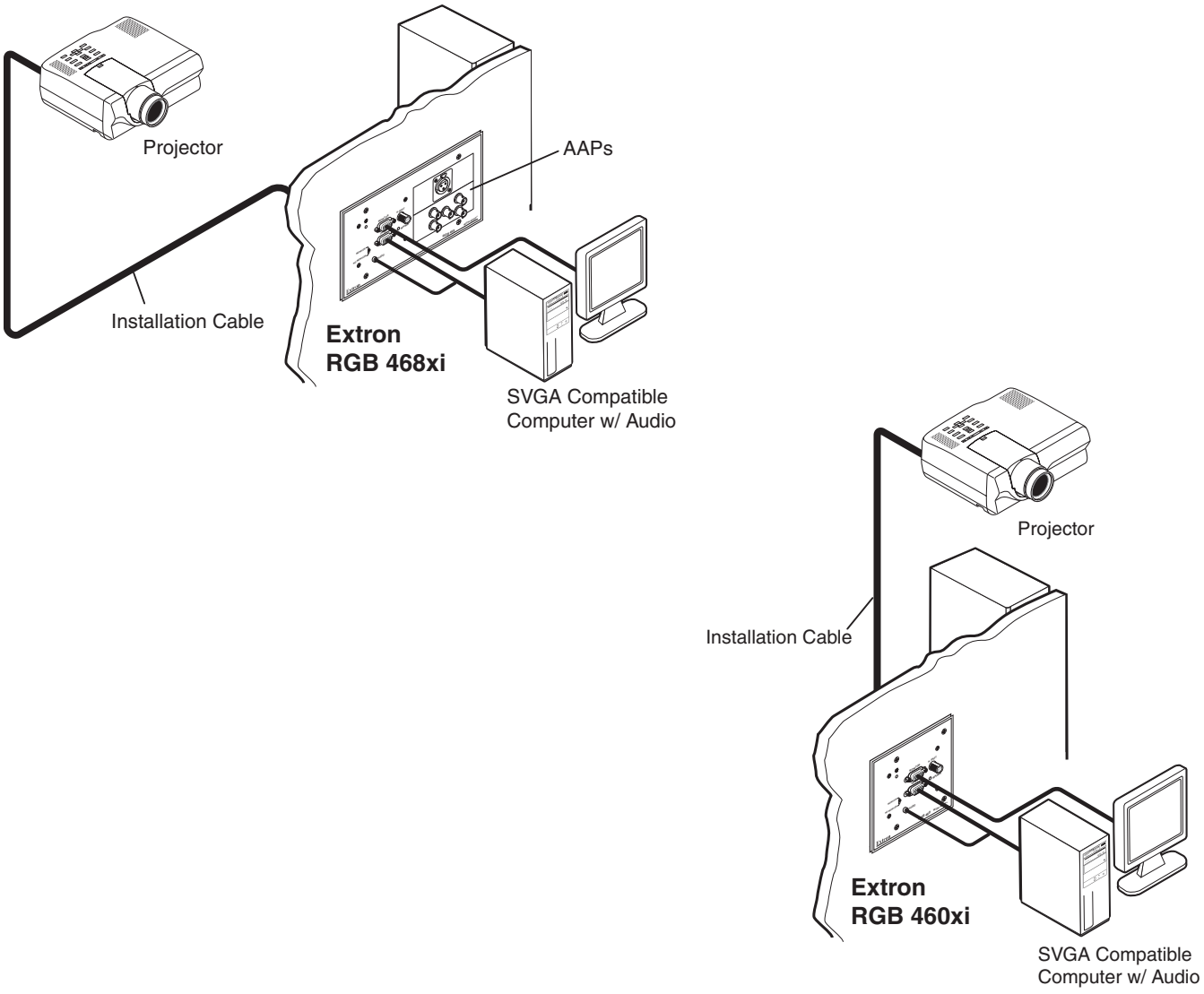


Figure 1. RGB 460 Series Application Examples

Installation and Operation

This section outlines installation and describes the front and rear panel features and how to cable the RGB 460 series. Topics included are:

- **Installation Overview**
- **Front Panel Features and Cabling**
- **Rear Panel Features and Cabling**
- **Euro Channel and Floor Box Versions**
- **Mounting Adapter Plates (AAPs/MAAPs)**
- **Pre-installation Testing**
- **Interface Mounting**

Installation Overview

CAUTION: Installation and service should be performed by authorized personnel only. UL Listed electrical boxes are recommended (see "**UL Guidelines**" in this chapter).

Installation Checklist:

- ☐ Turn off all equipment. Disconnect all input and output devices from their power source.
- ☐ If applicable, prepare the site as explained in the appropriate installation guide.
- ☐ Attach any optional architectural adapter plates (AAPs) to the interface (RGB 468xi, RGB 468 Mxi, or RGB 468xi AKM UK only) and then attach all the cables (see **"Front Panel Features and Cabling"** on page 4, **"Rear Panel Features and Cabling"** on page 7, and **"Mounting Adapter Plates (AAPs/MAAPs)"** on page 11).
- ☐ Set rear panel DIP switches as explained in **"Rear Panel Features and Cabling"** on page 7.
- ☐ Connect all output device, interface, and computer power cords and then turn on all devices. All devices should have power, and the audio and video should be working properly. If not, check all cabling and switch settings, and make adjustments as necessary (see **"Pre-installation Testing"** on page 12).
- ☐ Disconnect power from all the devices.
- ☐ Mount the interface as explained in the appropriate installation guide.
- ☐ Restore power to the devices.

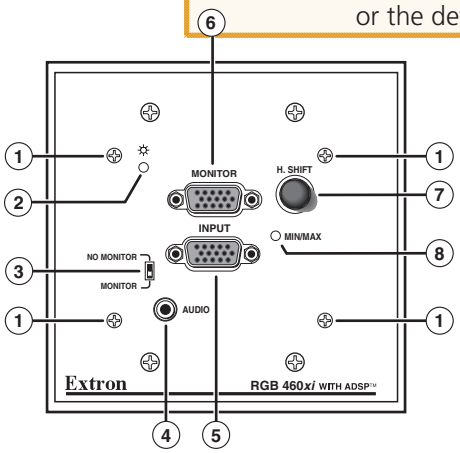
UL Guidelines

To comply with Underwriters Laboratories (UL) safety requirements, the following minimum guidelines must be followed:

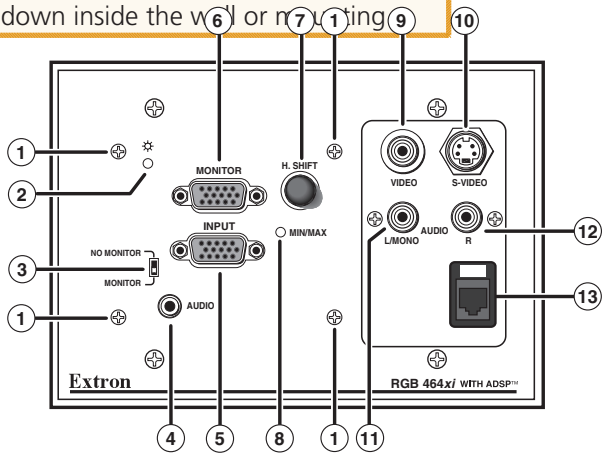
- The interface must not be used beyond its rated voltage range.
- The interface must be installed in a UL Listed junction box.
- The interface must be installed with conduit in accordance with the National Electrical Code.

Front Panel Features and Cabling

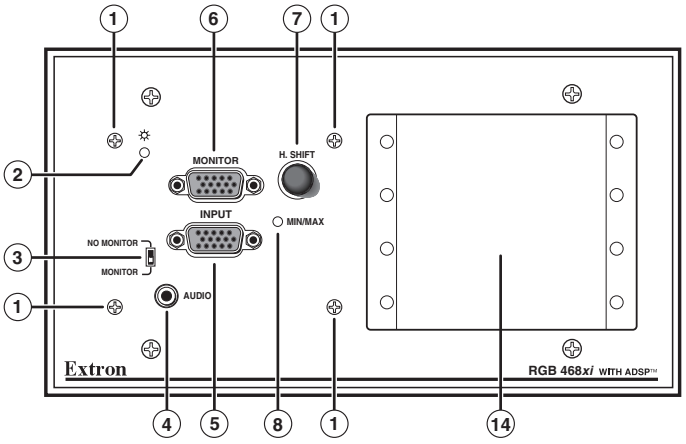
CAUTION: Do not remove the faceplate screws, (①), while the interface is attached or the detached interface may fall down inside the wall or mounting



RGB 460xi

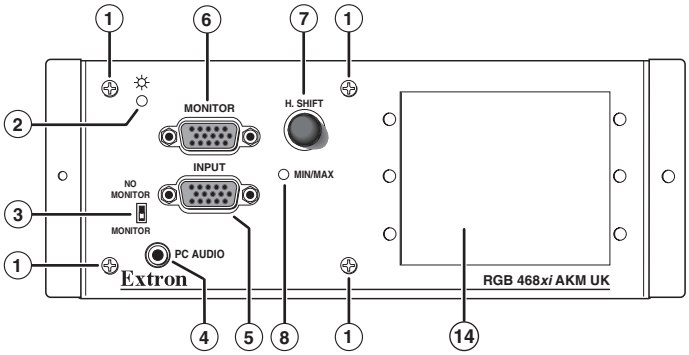


RGB 464xi



RGB 468xi

NOTE: The RGB 468 Mxi (not pictured) is functionally identical to the RGB 468xi (at left) except that it fits in a 3-gang box and provides four mini-AAPs (MAAPs).



RGB 468xi AKM UK

Figure 2. RGB 460 Series Front Panel Features

① **Faceplate screws** — These screws secure the faceplate to the rest of the interface.

> **CAUTION:** Do not remove these faceplate screws while the interface is attached to the wall or the detached interface may fall down inside the wall.

② **Power and signal LED** — This LED lights:

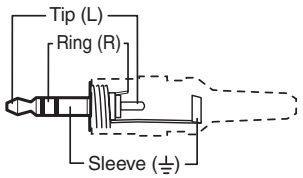
- **Yellow** to indicate the interface is receiving power.
- **Green** to indicate the interface is receiving power and that an active sync signal is present at the input.

> **NOTE:** If the input signal has sync on green, the LED will not change from yellow to green.

③ **Monitor switch** (video input termination) — Select one of the following video input impedance selections to provide the best picture:

- **No Monitor** (75 ohms) — If a local monitor **is not** connected or if the picture is too bright or blooming (unterminated).
- **Monitor** (high impedance) — If a local monitor **is** connected, a laptop breakout cable is used, or if the picture is too dark.

④ **Audio input connector** — Plug a 3.5 mm stereo plug into this jack for unbalanced audio input. Wire the male plug as shown on the right.



3.5 mm Stereo Plug Connector (unbalanced)

⑤ **Computer input connector** — Attach a cable from the computer to the interface via this female 15-pin HD connector.

⑥ **Buffered local monitor output connector** — Attach a cable from a local monitor to this female 15-pin HD connector.

⑦ **Horizontal shift control knob (H. Shift)** — While viewing the displayed image, rotate this control to move the image to the right or left on the screen. The Min/Max LED (⑧) flashes red whenever the minimum or maximum limit of this control is reached.

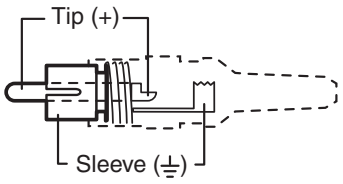
> **NOTE:** When active, DDSP disables the horizontal shifting control.

⑧ **Min or Max LED** — This LED blinks red momentarily whenever the minimum or maximum limits of the horizontal shift control (⑦) have been reached. Turning the horizontal shift control knob in the same direction after the limit has been reached causes the LED to continually blink.

⑨ **Composite video connector (RGB 464xi)** — This female RCA-to-BNC type connector provides pass-through capability for composite video input.

⑩ **S-video pass-through connector (RGB 464xi)** — Connect an S-video source to this 4-pin mini DIN pass-through connector.

⑪ ⑫ **RCA audio connectors (RGB 464xi)** — Connect the left audio signal cable to the white RCA connector (⑪–L/Mono), and the right audio signal cable to the red RCA connector (⑫–R) for unbalanced stereo audio pass-through input. Wire the RCA plugs as shown at right.



NOTE: When a mono audio signal is applied to the L/Mono input, the same signal is output to both left and right audio outputs.

⑬ **Network connector (RGB 464xi)** — Connect a computer to this RJ-45 female connector for pass-through to a network.

⑭ **Opening for architectural adapter plates (RGB 468xi)** — The RGB 468xi accepts up to four optional standard architectural adapter plates (AAPs) attached here (up to three on the RGB 468xi AKM UK). The RGB 468 Mxi can accept up to four optional mini architectural adapter plates (MAAPs) attached here. The adapter plates come in a variety of audio/video connector configurations.

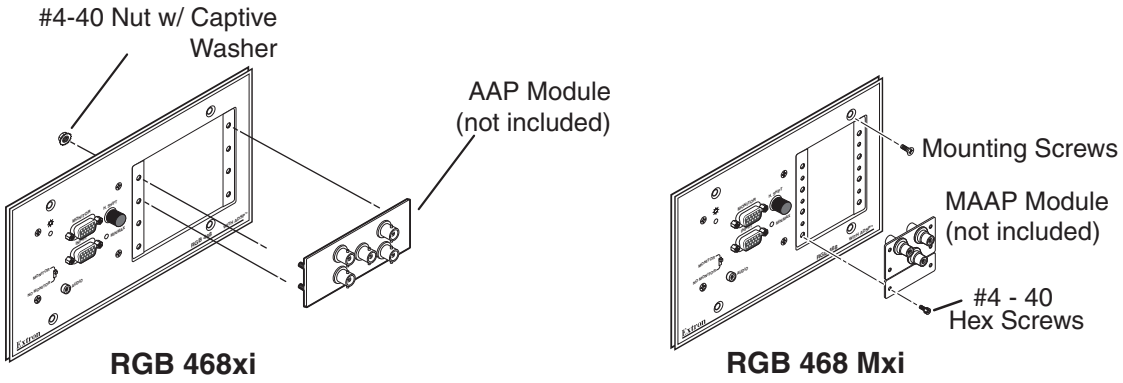


Figure 3. AAP and MAAP Mounting

NOTE: The AAPs for the RGB 468xi mount from the rear using #4-40 nuts. The MAAPs for the RGB 468 Mxi mount from the front using #4-40 hex screws.

Blank plates (two single space and one double space) are included with the interface to cover unused spaces. Adapter plates must be ordered separately (see **"AAP/MAAP Availability"** on page 17). They must also be attached to the faceplate and cabled before the interface is installed in the wall or furniture. The screws needed for installing the MAAP adapter plates are supplied, or built into the plates (AAPs). Nuts are supplied for AAP mounting.

To attach an AAP or MAAP:

1. Remove the blank plate or plates from the interface by unscrewing the hex screws (MAAPs) or removing the nuts (AAPs) that fasten the plates to the faceplate.
2. Attach the adapter plate to the faceplate with the provided hex screws (MAAPs) or captive washers and #4-40 nuts (AAPs).
3. Attach the output cables to the rear connectors of the adapter plates. Soldering will be required for some connectors. Attach foil and braided shields to ground connections.

Rear Panel Features and Cabling

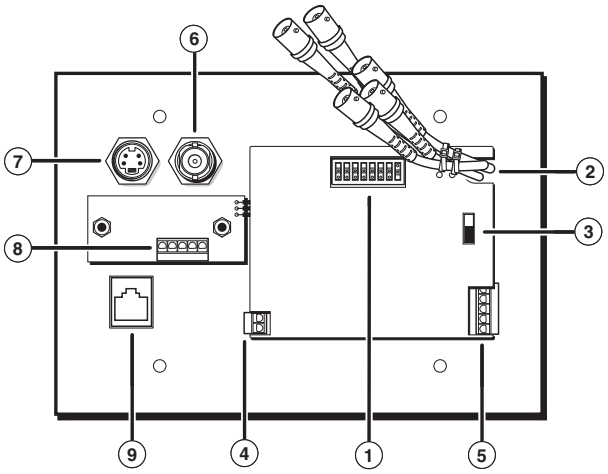


Figure 4. RGB 464xi Interface, Rear Panel

① **DIP switches** — This bank of DIP switches, shown below, controls sync on green output, composite sync output, DDSP, serration pulse output, vertical sync pulse width, and composite sync routing. Moving a switch up sets it "On" and moving it down sets it "Off". In the illustration below, switch **7** is shown in the "On" position.

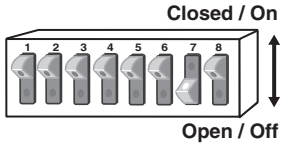


Figure 5. DIP Switch Bank

NOTE: The default for all DIP switches, except for switch 7, is Off (down).

1 — Sync on green

Off — The interface outputs separate horizontal and vertical sync (on the H and V connectors) for RGBHV.

On — The interface outputs sync on green (RGsB).

2 — Composite sync — This switch controls composite sync output.

Off — The interface outputs RGBHV or RGsB video.

On — The interface outputs combined horizontal and vertical sync for RGBS.

3 — DDSP (Digital Display Sync Processing) — This feature may be necessary for digital display devices such as LCD, DLP, and plasma displays. ADSP is the default. If the image is not displayed properly after other options such as serration pulse (**4**) and vertical sync pulse width (**5**) have been explored, set this switch to On.

Off — The interface performs sync processing operations, such as centering, with ADSP.

On — The interface uses DDSP.

NOTE: DDSP disables the horizontal shifting control.

4 — Serration pulse — Many LCD, DLP projectors and plasma displays must have serration pulses removed from the sync signal in order to display the image properly. Flagging or bending at the top of the video image is a sign the serration pulses should be removed.

Off — The interface does not output serration pulses.

On — The interface outputs serration pulses in the vertical sync interval.

5 — Vertical sync pulse width — Try adjusting the output vertical sync pulse width if no picture appears, the picture cuts in and out, or the picture is scrambled.

Off — The vertical sync pulse is wide.

On — The vertical sync pulse is narrow.

> **NOTE:** Also try switching from ADSP to DDSP, as explained in the description for DIP switch **3** on the previous page.

6 — Negative sync — This switch controls sync polarity.

Off — Output sync polarity follows (is the same as) input polarity.

On — Both the horizontal and the vertical sync signals are forced to negative polarity on output.

7 and 8 — Composite sync routing — These switches work together to route local monitor signals for Macintosh 13 inch monitors and all other Macintosh and VGA-type monitors.

> **NOTE:** To be valid, these switches must be set so that one is Off and the other is On. If both are set to On or both Off, composite sync routing will not function.

7 (On), **8** (Off) — Sync routing to 15-pin HD local monitor for all Macintosh (non-13 inch) and VGA monitors (default).

7 (Off), **8** (On) — Sync routing to 15-pin HD local monitor for a Macintosh 13 inch monitor.

② **RGB video output connectors** — Attach coaxial cables from the interface to the display device via these female BNC connectors. The BNCs are on red, green, blue, black, and yellow pigtail wires secured to the interface by the tie wraps.

Output	R	G	B	H	V
RGBHV	Red	Green	Blue	Black	Yellow
RGBS	Red	Green	Blue	Black	
RGsB	Red	Green	Blue		

③ **Gain switch** — To compensate for cable resistance and capacitance, set this switch to select the level of video gain that yields the sharpest picture.

Normal (bottom position)	Unity gain (no signal boost).
Medium (middle position)	Mid-level peaking and gain.
Maximum (top position)	Maximum amount of peaking and gain. (Select this for use with longer cables.)

NOTE: When the signal cable between the interface and the output device is shorter than approximately 125 feet, and the gain switch is set to medium or maximum, the image may be overcompensated. If the edges of the image seem to exceed their boundaries, or if thin lines and sharp edges look thick and fuzzy, try changing the gain/peaking setting. The gain switch will not be accessible after installation, so adjust the gain before placing the interface into a wall or furniture.

④ **Power connector** — Connect a 9–24 VDC power supply to this 3.5 mm, 2-pole, direct insertion captive screw connector. Wire the connector as shown below. Polarity is not important.

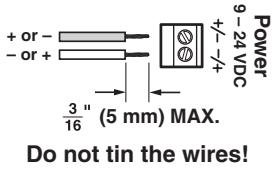


Figure 6. Power Connector Wiring

CAUTION: Always use a power supply supplied by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product. Extron power supplies are certified to UL/CSA 60950-1 and are classified as LPS (Limited Power Source). Use of a non-LPS or unlisted power supply will void all regulatory compliance certification.

Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The power supply is to be located within the same vicinity as the Extron A/V processing equipment in an ordinary location, Pollution Degree 2, secured to the equipment rack within the dedicated closet, podium or desk.

The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 75 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to building structure or similar structure.

NOTES: The length of the exposed wires in the stripping process is critical. The ideal length is 3/16 inches (5 mm). Any longer and the exposed wires may touch, causing a short circuit between them. Any shorter and the wires can be easily pulled out even if tightly fastened by the captive screws.

Do not tin the wires. Tinned wire does not hold its shape and can become loose over time.

⑤ **Audio output connector** — Insert wires into and tighten the screws on this 3.5 mm, 5-pole, direct insertion captive screw connector for unbalanced or balanced audio output. Wire the connector as shown here.

> **CAUTION:** For **unbalanced stereo output**, connect the sleeves to the ground contact.
> **DO NOT** connect the sleeves to the negative (–) contacts.

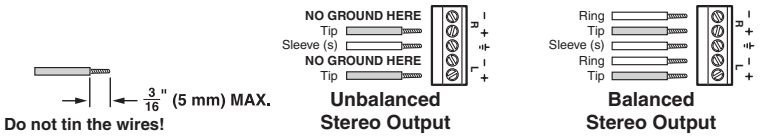


Figure 7. Audio Output Wiring

> **NOTE:** The following items ⑥, ⑦, ⑧, and ⑨ are features of the 464xi interface only.

⑥ **Composite video pass-through BNC connector** — A male BNC connector attaches here.

⑦ **S-video pass-through 4-pin mini DIN connector** — A male 4-pin mini DIN connector attaches here.

⑧ **Balanced active audio output connector** — Insert wires into and tighten the screws on this 3.5 mm, 5-pole, direct insertion captive screw connector for balanced active audio output. Wire the connector as shown above.

⑨ **Network pass-through RJ-45 connector** — If this connector is not required, a blank cover is supplied to fill the opening.

Euro Channel and Floor Box Versions

The RGB 460xi and RGB 468xi are available in Euro Channel (EC) versions, the RGB 460xi is available in two floor box models (MK and FSR), and the RGB 468xi AKM UK is designed for Ackermann floor boxes, see **"Accessories"** on page 17.

The front and rear panel features, cabling requirements, and testing/troubleshooting procedures are identical to the descriptions shown in this section for the wall box models. For installation instructions, see the RGB 460xi Series installation guide that addresses the specific requirements.

Mounting Adapter Plates (AAPs or MAAPs)

All AAPs and MAAPs should be mounted before the interface is installed in a wall or furniture. Each AAP has standoffs (screws built into the rear panel) and nuts, which can be used to secure the AAP to the interface. MAAPs are mounted from the front using hex screws.

1. Insert the AAP or MAAP standoffs into the screw holes in the interface.
2. Using the provided #4-40 nuts (standard AAPs) or the provided #4-40 hex screws (MAAPs), secure the AAP or MAAP to the interface.

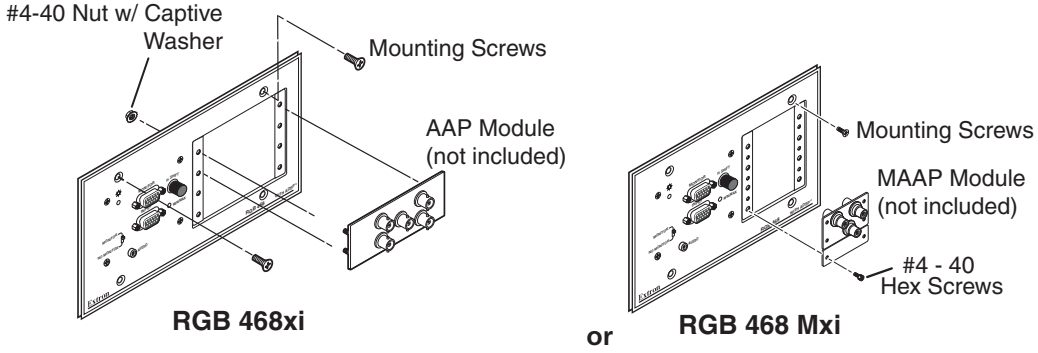


Figure 8. Mounting an Adapter Plate

3. Repeat steps **1** and **2** to mount other AAPs or MAAPs. Cover any openings in the interface with blank AAP or MAAP plates.
4. Be sure to include the AAP and MAAP connectors as part of the installation pretest before final installation of the interface.

For additional information about interface installation, refer to the appropriate installation guide available on the Website at **www.extron.com**.

Pre-installation Testing

Before installing the interface into the wall, furniture, or floor box, test the system to verify the connections and settings are correct.

1. Apply power to the interface. The power LED on the interface lights to indicate the interface is receiving power.
2. Power up and check all connected devices and the interface controls for proper function.

Troubleshooting

If the power LED does not light, first check the wiring at both the interface and the power supply, and then ensure the power supply is connected to a power source.

If the power LED lights but a connected device does not function properly follow the instructions below.

If the image does not appear or there is no sound:

1. Make sure that all connected devices are powered on.
2. Ensure the connectors are wired correctly at both ends of the cables. Audio cables must be wired for an unbalanced stereo input signal and for a balanced or an unbalanced stereo output signal, see **"Rear Panel Features and Cabling" on page 7**.
3. If the input is from a laptop computer and no picture appears, use a laptop breakout cable for the input connection. Check the computer user guide or contact Extron to determine if special commands are required to output video to the external video port. Also, many laptop screens shut off when the external video port is active.
4. Call the **Extron S³ Sales and Technical Support Hotline** if the image still does not appear or there is no sound.

If the image is not displayed correctly:

1. If the picture is too bright or dark, or if the edges of the image seem to exceed their boundaries, or if thin lines and sharp edges look thick and fuzzy, change the gain setting, see "**Gain Switch**" on page 9 for more details.
2. If the picture appears and is stable, but has ghosting or blooming, verify the video input is properly terminated. If the problem is not resolved by changing the termination, try using a different input cable. Poor quality or damaged cable can cause ghosting or blooming.
3. If the picture still is not displayed correctly, call the **Extron S³ Sales and Technical Support Hotline**.

If the interface does not respond to horizontal shifting

If the picture does not move on screen when the horizontal shift control knob is rotated, DDSP may be active. Set the DDSP DIP switch to Off, see **"Rear Panel Features and Cabling"** on page 7.

Interface Mounting

Once the system has been cabled and tested, the interface can be installed in the wall, furniture, or floor box. To mount the interface, refer to the installation guide for the specific mounting.

Reference Information

The following reference section contains product specifications, replacement parts numbers and AAP and MAAP architectural plate order details.

- **Specifications**
- **Ordering Information**
- **Mounting Adapter Plates (AAPs or MAAPs)**

Specifications

Video

Gain	Unity (0.7 V), 15% with 3 dB peaking (0.8 V), 30% with 6 dB peaking (0.9 V)
Bandwidth	300 MHz (-3 dB)

Video input and loop through

Number/signal type	1 analog RGBHV, RGBS, RGsB
Connectors	1 female 15-pin HD buffered input connector 1 female 15-pin HD local monitor loop through connector
Nominal level	0.7 Vp-p for RGB
Minimum/maximum levels	Analog: 0.3 V to 1.45 Vp-p with no offset at unity gain
Impedance	75 ohms or Hi Z, switchable (set to 75 ohms if no local monitor is connected)
Horizontal frequency	15 kHz to 150 kHz (optimum: 15 kHz to 62 kHz)
Vertical frequency	30 Hz to 170 Hz
Return loss	<-30 dB @ 5 MHz

Video output

Number/signal type	1 analog RGBHV, RGBS, RGsB
Connectors	5 female BNC on 2" to 2.5" cables
Nominal level	0.7 Vp-p for RGB
Minimum/maximum levels	Analog: 0.7 V to 0.9 Vp-p (switch selectable) with peaking and 0.7 Vp-p input
Impedance	75 ohms
Return loss	-30 dB @ 5 MHz

Sync

Input type	Autodetect RGBHV, RGBS, RGsB (accepts RGsB but does not strip from video)
Output type	RGBHV: at all times RGBS: switch selectable RGsB: switch selectable or pass-through
Input level	2.0 V to 5.5 Vp-p with ±0.2 VDC offset max.
Output level	4.0 V to 5.0 Vp-p, unterminated
Input impedance	510 ohms
Output impedance	75 ohms
Max. propagation delay	52 ns
Max. rise/fall time	2.5 ns
Polarity	Positive or negative

Audio — all models

Gain	Unbalanced output: 0 dB; balanced output: +6 dB
Response	20 Hz to 20 kHz, ±0.5 dB
THD + Noise	0.03% @1 kHz, 0.3% @ 20 kHz at nominal level
S/N	>90 dB at maximum output (14 dBu), balanced (unweighted)
Stereo channel separation	>90 dB @ 1 kHz to 20 kHz

Audio input — RGB 464xi

Number/signal type	2 stereo, unbalanced, 20 Hz to 20 kHz
Connectors	Ch. 1: 3.5 mm female stereo jack (2 channel), unbalanced; tip (L), ring (R), sleeve (ground) Ch. 2: 2 RCA female jacks
Impedance	>5k ohms unbalanced, DC coupled
Nominal level	-10 dBV (316 mV)
Maximum level	+8.5 dBu (unbalanced) at 1% THD+N

Audio input — RGB 460xi, RGB 460xi EC, RGB 460xi FSR, RGB 468Mxi, RGB 468xi, RGB 468xi AKM

Number/signal type	1 stereo, unbalanced, 20 Hz to 20 kHz
Connectors	3.5 mm female stereo jack (2 channel), unbalanced; tip (L), ring (R), sleeve (ground)
Impedance	>5k ohms unbalanced, DC coupled
Nominal level	-10 dBV (316 mV)
Maximum level	+8.5 dBu (unbalanced) at 1% THD+N

Audio output— RGB 464xi

Number/signal type	2 buffered, stereo (2 channel), balanced/unbalanced
Connectors	(2) 3.5 mm captive screw connectors, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1 dB channel to channel
Maximum level (600 ohm)	+14 dBm, balanced at 1% THD+N

Audio output — RGB 460xi, RGB 460xi EC, RGB 460xi FSR, RGB 468Mxi, RGB 468xi, RGB 468xi AKM

Number/signal type	1 buffered, stereo (2 channel), balanced/unbalanced
Connectors	3.5 mm captive screw connector, 5 pole
Impedance	50 ohms unbalanced,100 ohms balanced
Gain error	±0.1 dB channel to channel
Maximum level (600 ohm)	+14 dBm, balanced at 1% THD+N

NOTE: 0 dBu = 0.775 V, 0 dBV = 1 V, 0 dBV ≈ 2 dBu.

General

Power	Supplied by an included 12 VDC, 1 A external power supply
External power supply	100 VAC to 240 VAC, 50-60 Hz, external; to 9 to 12 VDC, 0.2 A, regulated
Power input requirements	12 VDC, 0.2 A (minimum)
Temperature/humidity	Storage: -40 to 158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32° to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, no vents
Mounting	
Floor box mount	
RGB 460/464/468xi SC models	Steel City AFM floor box mountable
RGB 460xi MK	MK box mountable
RGB 468xi AKM	Ackerman UK floor box mountable
All other models	Wall or furniture mountable

Enclosure type	Metal
Enclosure dimensions	
RGB 460xi faceplate	4.5" H x 4.6" W x 0.1" D (2 gang) (11.4 cm H x 11.7 cm W x 0.3 cm D)
RGB 460xi MK faceplate	3.4" H x 5.7" W x 0.1" D (8.6 cm H x 14.5 cm W x 0.3 cm D)
RGB 460xi FSR faceplate	4.5" H x 3.5" W x 0.1" D (11.4 cm H x 9.0 cm W x 0.3 cm D)
RGB 464xi/RGB 468Mxi faceplate	4.5" H x 6.4" W x 0.1" D (3 gang) (11.4 cm H x 16.3 cm W x 0.3 cm D)
RGB 468xi faceplate	4.5" H x 8.3" W x 0.1" D (4 gang) (11.4 cm H x 21.2 cm W x 0.3 cm D)
RGB 468xi AKM faceplate	3.0" H x 8.1" W x 0.6" D (7.6 cm H x 20.6 cm W x 1.5 cm D)
RGB 460xi EC faceplates	3.2" H x 4.4" W x 0.1" D (8.0 cm H x 11.2 cm W x 0.3 cm D)
RGB 460xi SC-AFM2 faceplate	2.9" H x 3.5" W x 0.1" D (7.4 cm H x 8.9 cm W x 0.3 cm D)
RGB 464xi SC-AFM6 faceplate	2.9" H x 8.9" W x 0.1" D (7.4 cm H x 22.6 cm W x 0.3 cm D)
Interface enclosure for all models	2.7" H x 3.3" W x 1.0" D (6.9 cm H x 8.4 cm W x 2.8 cm D) (Depth excludes front panel connectors and controls.)
Enclosure dimensions	
SC-AFM8 adapter plate	4.4" x H x 9.4" W x 0.1" D (11.2 cm H x 23.9 cm W x 0.3 cm D)
Product weight	
RGB 460xi SC-AFM2, RGB 460xi FSR	0.5 lbs (0.3 kg)
RGB 464xi SC-AFM6	0.8 lbs (0.4 kg)
SC-AFM8	0.6 lbs (0.3 kg)
RGB 460xi	0.5 lbs (0.2 kg)
RGB 460xi MK	0.5 lbs (0.2 kg)
RGB 464xi, RGB 468xi, RGB 468 Mxi	0.7 lbs (0.3 kg)
EC models	0.7 lbs (0.3 kg)
RGB 468xi AKM	0.8 lbs (0.4 kg)
Shipping weight	
RGB 468xi AKM	2 lbs (1 kg)
All other models	3 lbs (2 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%.

NOTE: Specifications are subject to change without notice.

Ordering Information

RGB 460xi	Part numbers
Interface	60-373-02 (black), -03 (white), -05 (RAL9010 white)
2-gang mud ring kit	70-519-22 (black), -23 (white)
Power supply kit	70-775-01 (12 VDC, 1 A external)

RGB 460xi FSR, RGB 460xi SC-AFM2	Part numbers
Interface	60-373-40 (FSR) 60-463-01 (Steel City)
2-gang mud ring kit	70-519-22 (black), -23 (white)
Power supply kit	70-775-01 (12 VDC, 1 A external)

RGB 460xi MK	Part numbers
Interface	60-467-01 (black, white), -05 (RAL9010 white)
4-gang mud ring kit	70-519-42 (black), -43 (white)
Power supply kit	70-775-01 (12 VDC, 1 A external)

RGB 460xi EC	Part numbers
Interface	60-373-50 (RAL9010 white)
Power supply kit	70-775-01 (12 VDC, 1 A external)

RGB 464xi	Part numbers
Interface	60-374-02 (black), -03 (white), -05 (RAL9010 white)
3-gang mud ring kit	70-519-32 (black), -33 (white)
Power supply kit	70-775-01 (12 VDC, 1 A external)

RGB 468xi	Part numbers
Interface	60-375-02 (black), -03 (white) -05 (RAL9010 white)
4-gang mud ring kit	70-519-42 (black), -43 (white)
Power supply kit	70-775-01 (12 VDC, 1 A external)

RGB 468xi AKM	Part numbers
Interface	60-626-02 (black)
Power supply	70-775-01 (12 VDC, 1 A external)
Blank AAP, single (1)	70-090-01 (gray), -11 (black), -21 (white), -51 (RAL9010 white)
Blank AAP, double (1)	70-090-12 (black), -22 (white)

RGB 468 Mxi	Part numbers
Interface	60-591-02 (black), -03 (white), -05 (RAL9010 white)
3-gang mud ring kit	70-519-32 (black), -33 (white)
Power supply kit	70-775-01 (12 VDC, 1 A external)

NOTE: A Setup Guide (part number **68-542-50**) ships with all RGB 460xi Series interface models. Depending on mounting, one of the following installation guides ship with the interface:

Description	Part Number
RGB 400xi Series MK Installation Guide	68-636-02
RGB 400xi Series Wall Box Installation Guide	68-636-03
RGB 460xi Steel City Box Installation Guide	68-636-04
RGB 460xi/472xi FSR Installation Guide	68-636-05
AKM UK Series Installation Guide	68-904-01

Accessories

Wall/Junction boxes	Part number
JB 225 two-gang J-box, 2.5 inches deep	980084
JB 325 three-gang J-box, 2.5 inches deep	980083
JB 425 four-gang J-box, 2.5 inches deep	980097

Audio connector	Part number
3.5 mm Mini Stereo-HQ/10 (quantity 10)	100-331-01

Cables

Male-to-male Molded VGA cables	Part number
VGA M-M MD/6, 6 feet (1.8 m)	26-238-01
VGA-A M-M MD/3 (with audio), 3 feet (90 cm)	26-490-01
VGA-A M-M MD/6 (with audio), 6 feet (1.8m)	26-490-02
VGA-A M-M MD/12 (with audio), 12 foot (3.6 m)	26-490-03

BNC Series Mini High Resolution Cables (non-plenum)	Part number
MHR-5 BNC/3, 3 feet (90 cm)	26-260-15
MHR-5 BNC/6, 6 feet (1.8 m)	26-260-01
MHR-5 BNC/12, 12 feet (3.6 m)	26-260-02
MHR-5 BNC/25, 25 feet (7.6 m)	26-260-03
MHR-5 BNC/35, 35 feet (10.6 m)	26-260-17
MHR-5 BNC/50, 50 feet (15.2 m)	26-260-04
MHR-5 BNC/75, 75 feet (22.8 m)	26-260-16
MHR-5 BNC/100, 100 feet (30.4 m)	26-260-05

BNC Series Mini High Resolution Cables (plenum)	Part number
MHR-5P BNC/3, 3 feet (90 cm)	26-378-01
MHR-5P BNC/6, 6 feet (1.8 m)	26-378-02
MHR-5P BNC/12, 12 feet (3.6 m)	26-378-03
MHR-5P BNC/25, 25 feet (7.6 m)	26-378-04
MHR-5P BNC/35, 35 feet (10.6 m)	26-378-12
MHR-5P BNC/50, 50 feet (15.2 m)	26-378-05
MHR-5P BNC/75, 75 feet (22.8 m)	26-378-06
MHR-5P BNC/100, 100 feet (30.4 m)	26-378-07

AAP and MAAP Modules

A variety of Architectural Adapter Plates (AAPs) and Mini Architectural Adapter Plates (MAAPs) for pass-through connections are available for the RGB 468xi and RGB 468 Mxi interfaces.

The RGB 468xi can accommodate up to four single-space AAPs (up to three with the RGB 468xi AKM UK), and the RGB 468 Mxi can accommodate up to four single-space MAAPs.

Both single- and double-space AAPs and MAAPs, and AAP and MAAP blanks are available. Refer to the current Extron catalog or Website for a complete listing.

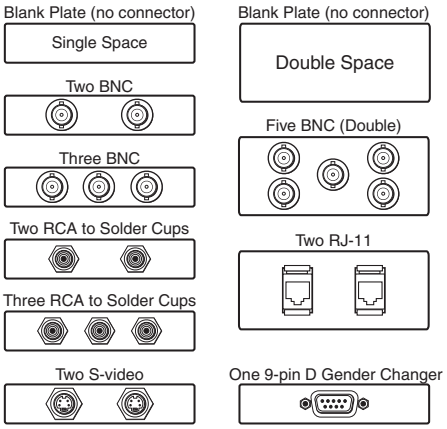


Figure 9. Sample Architectural Adapter Plates

Extron® Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:
Extron Electronics
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe, Africa, and the Middle East:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:
Extron Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: (714) 491-1500 **Europe**: 31.33.453.4040
Asia: 65.6383.4400 **Japan**: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

Extron **USA - West** Headquarters	Extron **USA - East**	Extron **Europe**	Extron **Asia**	Extron **Japan**	Extron **China**	Extron **Middle East**
+800.633.9876 Inside USA/Canada Only	**+800.633.9876** Inside USA/Canada Only	**+800.3987.6673** Inside Europe Only	**+800.7339.8766** Inside Asia Only	**+81.3.3511.7655**	**+400.883.1568** Inside China Only	**+971.4.2991800**
+1.714.491.1500 **+1.714.491.1517** FAX	**+1.919.863.1794** **+1.919.863.1797** FAX	**+31.33.453.4040** **+31.33.453.4050** FAX	**+65.6383.4400** **+65.6383.4664** FAX	**+81.3.3511.7656** FAX	**+86.21.3760.1568** **+86.21.3760.1566** FAX	**+971.4.2991880** FAX

© 2011 Extron Electronics All rights reserved. www.extron.com